

**MULTIFREQUENCY MICROSTRIP PATCH ANTENNA WITH PARASITIC
COUPLED ELEMENTS**

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OBJECT AND BACKGROUND OF THE INVENTION

The present invention refers to a new class of microstrip antennas with a multifrequency behaviour based on stacking several parasitic patches underneath an active upper patch.

10 An antenna is said to be multifrequency when the radioelectrical performance (impedance, polarization, pattern, etc.) is invariant for different operating frequencies. The concept of multifrequency antennas derives of frequency independent antennas. Frequency independent antennas were first proposed by V.H.Rumsey (V.H.Rumsey, *"Frequency Independent Antennas"*, 1957 IRE National Convention Record, pt.1, pp.114-118) and can be defined as a family of antennas whose performance (impedance, polarization, pattern...) remains the same for any operating frequency. Rumsey work led to the development of the log-periodic antenna and the log-periodic array. Different groups of independent antennas can be found in the literature as the self-scalable antennas based directly in Rumsey's Principle as spiral antennas (J.D.Dyson, *"The Unidirectional Equiangular Spiral Antenna"*, IRE Trans. Antennas Propagation, vol. AP-7, pp.181-187, October 1959) and self-complementary antennas based on Babinet's Principle. This principle was extended later on by Y.Mushiake in 1948.

20 An analogous set of antennas are multifrequency antennas where the antenna behaviour is the same but at a discrete set of frequencies. Multilevel antennas such as those described in Patent Publication No. WO01/22528 *"Multilevel Antennas"* are an example of a kind of antennas which due to their

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